L.E.K.

VACCINEX, INC.

MAb Partnership Strategy
Final Presentation

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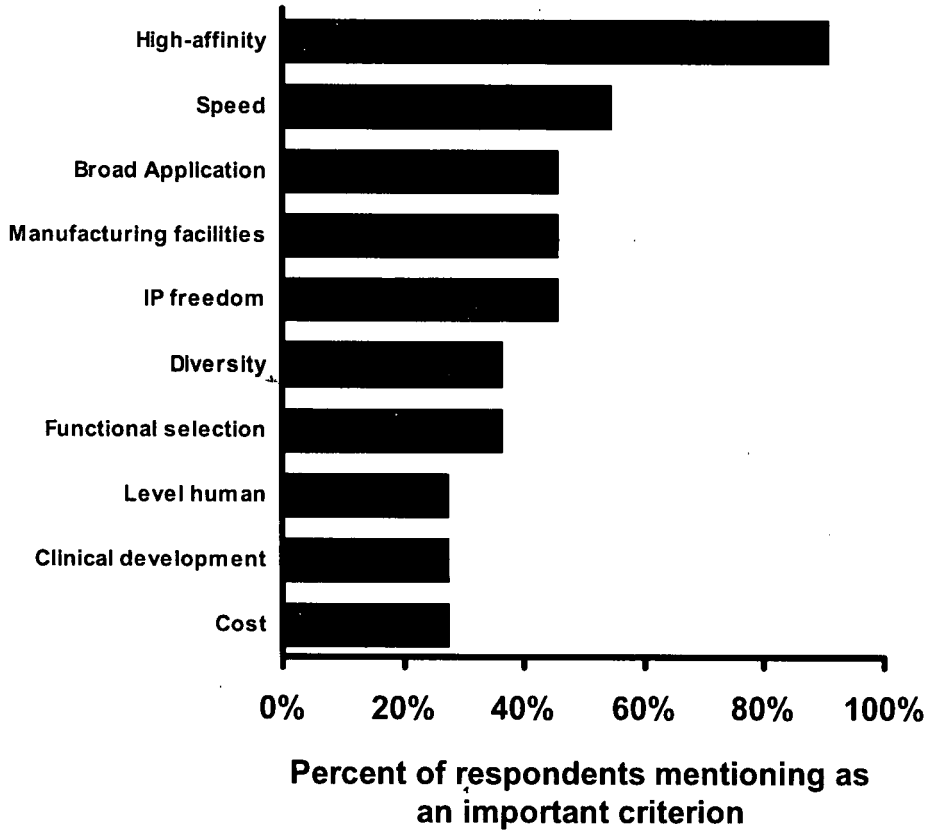
Interviewees listed the affinity of the end product as the key factor in determining which MAb discovery platform to use



- Interviewees were asked what the most important criteria were in selecting a MAb partner and the mentions of various criteria were scored
- Interviewees consistently mentioned wanting an antibody selection platform that reliably worked and would generate a high-affinity MAb
- While high cost could be a deal killer, it was mentioned by only three companies as one of their key criteria

Source : L.E.K. interviews and analysis (n=11)

Of primary importance is the delivery of a high affinity MAb, regardless of the other concerns

High Affinity

- There is still demand for a novel platform that delivers high affinity MAbs

  "... I think it's quite obvious what the field is looking for, we want something that works!..."

  David Wurtman, EOS Biotechnology, Director of Business Development

- Interviewees thought the biological process of affinity maturation which occurs in the in vivo mouse immune response significantly improves the quality of antibodies

  "... We want a high affinity antibody from the start. The in vivo approach is better for at this and why we use XenoMouse first, and if that fails, we try normal mice... speed is nice but quality is the primary driver..."

  Ian Nisbet, Millennium Pharmaceuticals, Director of Licensing and M & A

  - This opinion is reflected in the high number of deals signed over the last 5 years by transgenic mouse companies (50% of deals)

- However, because the mouse approach doesn't consistently work for all targets and the phage approach commonly yields low affinity antibodies, no current platform satisfies everyone

  "... We have been evaluating MAb companies for research and therapeutic uses for awhile now and we have yet to make a decision. None of the companies are a clear winner..."

  Chi Chi Zhu, Celera Genomics, Director of Business Development

Source : L.E.K. interviews

Interviewees also saw opportunities with our platform to screen difficult antigens and potentially screen based on functional assays

Broad Application - Difficult Targets

- **Companies thought this approach would be useful for a variety of targets for which they had been unsuccessful in generating high affinity antibodies**

"... 50% of our targets fail to elicit an immune response in mice..."
Ian Nisbet, Millennium Pharmaceuticals, Director of Licensing and M & A

"... There's no question this is where the mouse falls down. In oncology, the majority of our targets fail to work...this is absolutely due to the difficulties with homologous targets..."
Paul Spence, Pharmacia, Executive Director of Biotechnology

"... I would be interested in whether their approach would be useful for non-protein targets. We have several which have been particularly difficult to develop antibodies against..."
Susan Thorpe, Novo Nordisk, Program Manager Scientific Licensing

Functional Selection

- **Several were quite interested in selecting antibodies based upon functional assays**

"... What is the application range on the functional assays. We are working with anti-fungals and if there was a way to screen for antibodies based upon fungal cell adherence or growth, we would be quite interested..."
Richard Labaudiniere, Genome Therapeutics, SVP of Research & Development

"... I see this platform fitting in where we understand the desired effector function and want to use that in the screen. Functional assays get you straight to the bottom line..."
Paul Spence, Pharmacia, Executive Director of Biotechnology

Fully Assembled MAbs

- **Customers thought the generation of fully assembled human MAbs would make our approach superior to other phage display platforms**

"... Here you can have assays setup to immediately test the IgG isotype for the particular effects you want to see. Other phage approaches require re-engineering steps to clone the selected fragments into a full antibody structure..."
Paul Spence, Pharmacia, Executive Director of Biotechnology

Source : L.E.K. interviews

...however, there were some concerns regarding the affinity levels of our MAbs and the general lack of data

Low Affinity

- **There was skepticism regarding whether the library diversity would be sufficient to produce high-affinity MAbs without affinity maturation**

"... We consider phage display to be a research tool. We've never seriously considered it for therapeutic purposes due to the low quality of the antibodies produced. Leukosite had a deal with MorphoSys for 3 targets but that has ended..."
Ian Nisbet, Millennium Pharmaceuticals, Director of Licensing and M & A

"... We use mice and if that doesn't work, we use rabbits. The in vivo affinity maturation in those systems produces better antibodies than the phage systems..."
Dee Atwell, Celltech, Business Development Manager

More Data

- **The majority of interviewees wanted to view data demonstrating successes in MAb discoveries and positive comparisons versus other platforms**

"... I would want to see some results and a presentation of why it is superior. It seems smart on paper, but I would want to see some examples..."
Richard Labaudiniere, Genome Therapeutics, SVP of Research & Development

"... Abgenix will be a yardstick for our future deals. Vaccinex will have to demonstrate how their approach is better than what we are currently using ..."
Andrew Pasternak, MDS Proteomics, Manager of Technology Development

Safety Concerns

- **Several people mentioned safety concerns with handling vaccinia virus, but were typically content as long the experiments were to be handled by us**

"... What is the biosafety surrounding vaccinia. Are there additional regulations. It must be harder to handle than yeast or *E. coli*..."
Ueli Gubler, Roche, Senior Research Leader

Source : L.E.K. interviews

Our platform can be positioned as an alternative to mouse approaches for targets that failed to produce an antibody in mice

- Companies often de-prioritize targets that fail to generate MAbs, and thought partnerships involving such targets would be low risk with high potential rewards

  "... One of our selection criteria in advancing a project is whether we can generate antibodies against the target. We may be interested in re-examining some of these deprioritized targets..."
  Ian Nisbet, Millennium Pharmaceuticals, Director of Licensing and M & A

  "... From target to target, it is sometimes difficult to generate an immune response in a mouse. This is definitely the selling point of phage..."
  Dee Atwell, Celltech, Business Development Manager

- We can make favorable comparisons versus phage display approaches due to our human assembly in human cells, immediate generation of bivalent immunoglobulins, and improved diversity due to independent heavy and light chain selection

- With experience and further positive data on the quality of antibodies generated, we can then begin to position the platform as superior in terms of both breadth of targets and high quality

Source : L.E.K. interviews and analysis

Additionally, we should develop our functional selection capabilities as this generated considerable interest and would provide an unique niche

- **Companies were interested in our potential to screen based on functional selection assays and saw it as a way to quickly identify a relevant MAb**

  "... Your advantage is to quickly screen through in vitro functional assays. This sounds like a smarter and faster way to go..."
  Richard Labaudiniere, Genome Therapeutics, SVP of Research & Development

- **Setting up functional assays will require different high-throughput screening equipment than our current MAb selection assays and may be difficult to set up in the short-term**

- **Partners with HT screening expertise may be interested in a highly collaborative project to set up the relevant screens, i.e. Genome Therapeutics has expertise in HT screens for small molecules that inhibit microbial growth, and expressed interest in working with Vaccinex on using such assays to select MAbs**

Source : L.E.K. interviews